**Making a Geologic Timeline Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

You will work with two other classmates to create a timeline of Earth’s history that is accurate and to scale. It will include 20 events from Earth’s history, including its formation, and the events are to be placed in the correct location on the timeline. You will need to find out how long ago each event occurred, and will need to convert the number of years into a distance of measurement. Every centimeter on your timeline will represent 10 million years.

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| **Pre-lab:** If there are 4.5 billion years of Earth history, or 4,500 million years of history on Earth, how many centimeters long will your timeline need to be? Remember, every centimeter represents 10 million years.  **Show work here:** |

**Purpose:**

* To understand how Earth’s geologic timeline is divided
* To create and recognize the importance of making a good geologic timeline and scale.

**Roles:** Assign each member of the group a role. All members will be responsible for locating information in the textbook and resources around the classroom, and for creating the timeline. Each group will create one timeline.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Checker:** Makes sure that all steps are followed and all events are on timeline.

Actually checks off or crosses off the items as they are completed.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Communicator:** The only person of the group that communicates questions or

problems to Ms. Simons. You will also be responsible for communicating tasks to group members each day. Remember, everyone is to be

working at all times!

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Materials Manager:** The person in charge of getting the materials and putting them

away. You will also be in charge of collecting and returning the group folder each day to Ms. Simons. Notifies Ms. Simons of any broken supplies that need to be replaced.

**Materials:** Plain white paper, rulers or meter sticks, textbooks, ISN, colored pencils or markers, group folder.

**Procedure:** *Use this handout and read all of the directions carefully to complete the activity. The Checker should actually cross off each item as it is completed.*

1. Arrange the plain pieces of paper in landscape direction. Put the papers end to end together until there is 5 meters of copying paper.
2. Using clear tape, tape the paper together so that there is 5 meters of paper from end to end. It is OK to have the paper overlap, as this will make your timeline sturdier.

|  |
| --- |
| I--------------------------------------------------- Distance=5 m --------------------------------------------I |

1. Using a meter stick, draw a line lengthwise through the middle of the paper from left to right. This will be your **timeline.**

1. In the top left corner of your paper timeline, make a scale. Label the scale: 1 cm = 10 million years.
2. Starting on the left side of the paper, measure 5 cm to the right on the line and make a vertical mark. Label this mark with the word - **Today.** This represents 0 years ago and one end of your timeline.
3. From this mark, measure 1 meter to the right on the timeline and make a vertical mark. Label this mark 1 billion years ago. Measure and mark each meter after that up to 4 meters or 4 billion years from today. It is OK if someone goes over it a second time to double check the distances. Doing this step now will save future headaches.
4. Now, measure 55 cm to make the total length of the time line 4.55 meters. Mark and label this distance 4.55 billion years (**The Beginning of Earth’s Time).**
5. Label the start year and name of **each eon and era** on your geologic time scale. Using the scale 1 cm = 10 million years, measure the distance to each era from Today by using the following information

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Eons:

1. Hadean Eon started \_\_\_\_\_\_\_\_\_ years ago = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cm from Today
2. Archaean Eon started \_\_\_\_\_\_\_\_\_ years ago = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cm from Today
3. Proterozoic Eon started \_\_\_\_\_\_\_\_\_ years ago = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cm from Today
4. Phanerozoic Eon started \_\_\_\_\_\_\_\_\_ years ago = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cm from Today

Eras:

1. Cenozoic Era started 65 million years ago = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ cm from Today
2. Mesozoic Era started 245 million years ago = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ cm from Today
3. Paleozoic Era started 545 million years ago = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ cm from Today

Larger Unit of Time:

1. Precambrian Time started 4.55 billion years ago and ended \_\_\_\_\_\_\_\_\_ years ago = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ cm from Today

1. Use your textbook, notes, or resources in the classroom to identify the year that each of the events below occurred. Then, convert the number of years into centimeters. You will need to use multiple textbooks!
2. Label the major events of each era on your geologic time scale. Starting with today, measure back in time on your timeline. Cut out each of the major events and paste them onto the geologic time scale or write the event on your timeline. It is easiest if **you lay out** each of the events on the timeline **before** pasting them on. **Have someone double check** to make sure you have measured the correct distances from today.

**Geologic Timeline Major Events**

|  |  |
| --- | --- |
| First reptiles | First mammals |
| Dinosaurs extinct | Oldest fossil known |
| Greatest extinction on Earth (End-Permian) | Amphibians |
| Cyanobacteria | Pangaea begins to break |
| First humans | Formation of Earth |
| First life on Earth | Trilobites |
| Fish | Land Plants |
| Insects | First plants |
| Cambrian Explosion | Pliocene Ice Ages |
| Formation of Appalachians | Formation of Himalayan Mountains |

**Group Members: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Earth’s Geographical Timeline Rubric**

**\_\_\_\_ EONS AND ERAS:** All eons and eras are listed, in order on the timeline and have the correct

scale. (8 points)

**\_\_\_\_ EVENTS:** All events on the timeline description page are listed on the timeline and

at their **exact** locations (20 points)

**\_\_\_\_ SCALE:**  Timeline is to scale (all years have been accurately converted into

centimeters and centimeters are listed on timeline (8 points)

**\_\_\_\_ CREATIVITY:** Students used color and creativity while creating their timeline. (4 points)

**\_\_\_\_\_\_ Extra credit: all periods** are correctly indicated on the timeline and **are to scale**

**(2 points).**

**Total Group Points: \_\_\_\_\_\_\_\_ / 40**

Comments:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Comments:

|  |  |
| --- | --- |
| **Check list:**  Eons and Eras  \_\_\_\_\_ Headean Eon 450cm or 455 (70-75 cm)  \_\_\_\_\_\_Archaean Eon 380 cm (130 cm)  \_\_\_\_\_\_ Proterozoic Eon 250 cm (195.5 cm)  \_\_\_\_\_\_ Phanerozoic Eon 54.5 cm to today  \_\_\_\_\_\_ Precambrian 395.5 cm to 400.5 cm  \_\_\_\_\_\_ Paleozoic Era: 54.5 - 24.5 (30 cm)  \_\_\_\_\_\_ Mesozoic Era: 24.5-6.5 (18 cm)  \_\_\_\_\_\_Cenozoic Era started 6.5 cm (6.5 cm)  \_\_\_\_\_\_Formation of Earth 450-455 cm 4.5 bya  \_\_\_\_\_\_Oldest Fossil: 350 cm 3.5 bya  \_\_\_\_\_\_First living things: 350 cm 3.5 bya  \_\_\_\_\_\_Cambrian Explosion: 54.5-52.5cm 545 mya  \_\_\_\_\_\_Trilobites: 54.5 cm 545 mya  \_\_\_\_\_\_Fish: 51 to 44cm 510mya to 440mya  \_\_\_\_\_\_First plants (underwater) 49.8cm 498 mya  \_\_\_\_\_\_Land plants: 44cm, 35.9-29.9cm 440 mya, 350-399 mya  \_\_\_\_\_\_First Amphibians 41 to 36cm 410-360 mya  \_\_\_\_\_\_First reptiles: 32.5 cm to 32.5 325 mya - 325mya  \_\_\_\_\_\_Insects - 41.6-35.9cm 359-416mya  \_\_\_\_\_\_Appalachian: 37.5 cm 375 mya  \_\_\_\_\_\_Coal forming forest 35.9-29.9cm 359-299mya  \_\_\_\_\_\_Greatest (End Permian) ext 24.8cm248mya  \_\_\_\_\_\_Pangaea breaks apart 24.8-20cm 248-200 mya  \_\_\_\_\_\_First Mammal: 25-20 cm 200-250 mya  \_\_\_\_\_\_Dinos extinct: 6.5 65 mya  \_\_\_\_\_\_Himalayas: 0.5cm 5mya  \_\_\_\_\_\_Pliocene Ice Age: 0.1-0.2 cm cm 1.8mya  \_\_\_\_\_\_First humans: 0.2 cm to 0.02 cm 200,000 to 2mya    **✔ =** correct and in correct spot  **X =** on timeline, but location not accurate.  **O =** missing from timeline or location is too far off. | **Check list:**  Eons and Eras  \_\_\_\_\_ Headean Eon 450cm or 455 (70-75 cm)  \_\_\_\_\_\_Archaean Eon 380 cm (130 cm)  \_\_\_\_\_\_ Proterozoic Eon 250 cm (195.5 cm)  \_\_\_\_\_\_ Phanerozoic Eon 54.5 cm to today  \_\_\_\_\_\_ Precambrian 395.5 cm to 400.5 cm  \_\_\_\_\_\_ Paleozoic Era: 54.5 - 24.5 (30 cm)  \_\_\_\_\_\_ Mesozoic Era: 24.5-6.5 (18 cm)  \_\_\_\_\_\_Cenozoic Era started 6.5 cm (6.5 cm)  \_\_\_\_\_\_Formation of Earth 450-455 cm 4.5 bya  \_\_\_\_\_\_Oldest Fossil: 350 cm 3.5 bya  \_\_\_\_\_\_First living things: 350 cm 3.5 bya  \_\_\_\_\_\_Cambrian Explosion: 54.5-52.5cm 545 mya  \_\_\_\_\_\_Trilobites: 54.5 cm 545 mya  \_\_\_\_\_\_Fish: 51 to 44cm 510mya to 440mya  \_\_\_\_\_\_First plants (underwater) 49.8cm 498 mya  \_\_\_\_\_\_Land plants: 44cm, 35.9-29.9cm 440 mya, 350-399 mya  \_\_\_\_\_\_First Amphibians 41 to 36cm 410-360 mya  \_\_\_\_\_\_First reptiles: 32.5 cm to 32.5 325 mya - 325mya  \_\_\_\_\_\_Insects - 41.6-35.9cm 359-416mya  \_\_\_\_\_\_Appalachian: 37.5 cm 375 mya  \_\_\_\_\_\_Coal forming forest 35.9-29.9cm 359-299mya  \_\_\_\_\_\_Greatest (End Permian) ext 24.8cm248mya  \_\_\_\_\_\_Pangaea breaks apart 24.8-20cm 248-200 mya  \_\_\_\_\_\_First Mammal: 25-20 cm 200-250 mya  \_\_\_\_\_\_Dinos extinct: 6.5 65 mya  \_\_\_\_\_\_Himalayas: 0.5cm 5mya  \_\_\_\_\_\_Pliocene Ice Age: 0.1-0.2 cm cm 1.8mya  \_\_\_\_\_\_First humans: 0.2 cm to 0.02 cm 200,000 to 2mya    **✔ =** correct and in correct spot  **X =** on timeline, but location not accurate.  **O =** missing from timeline or location is too far off. |